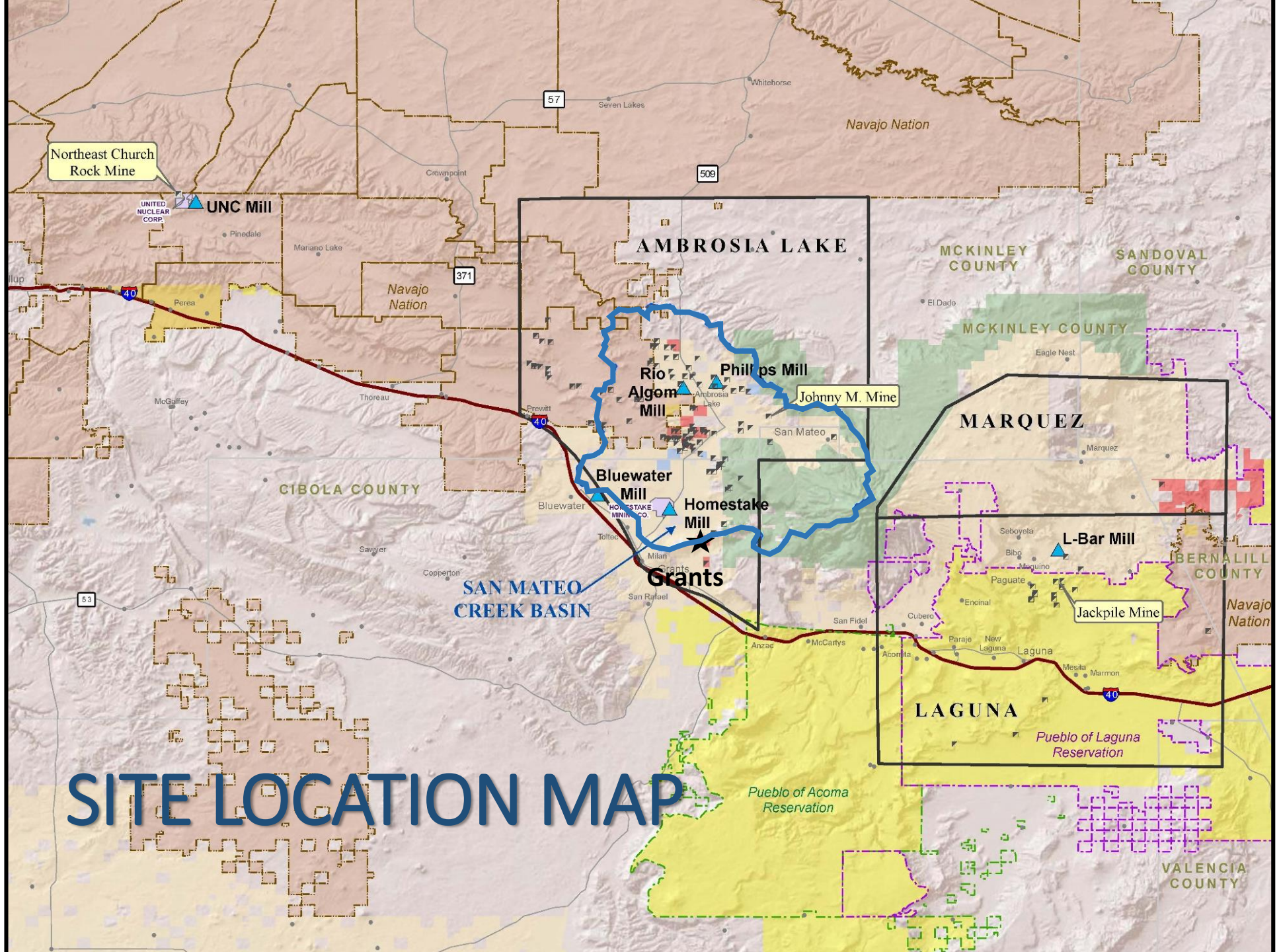
EPA GROUND WATER INVESTIGATION STATUS UPDATE

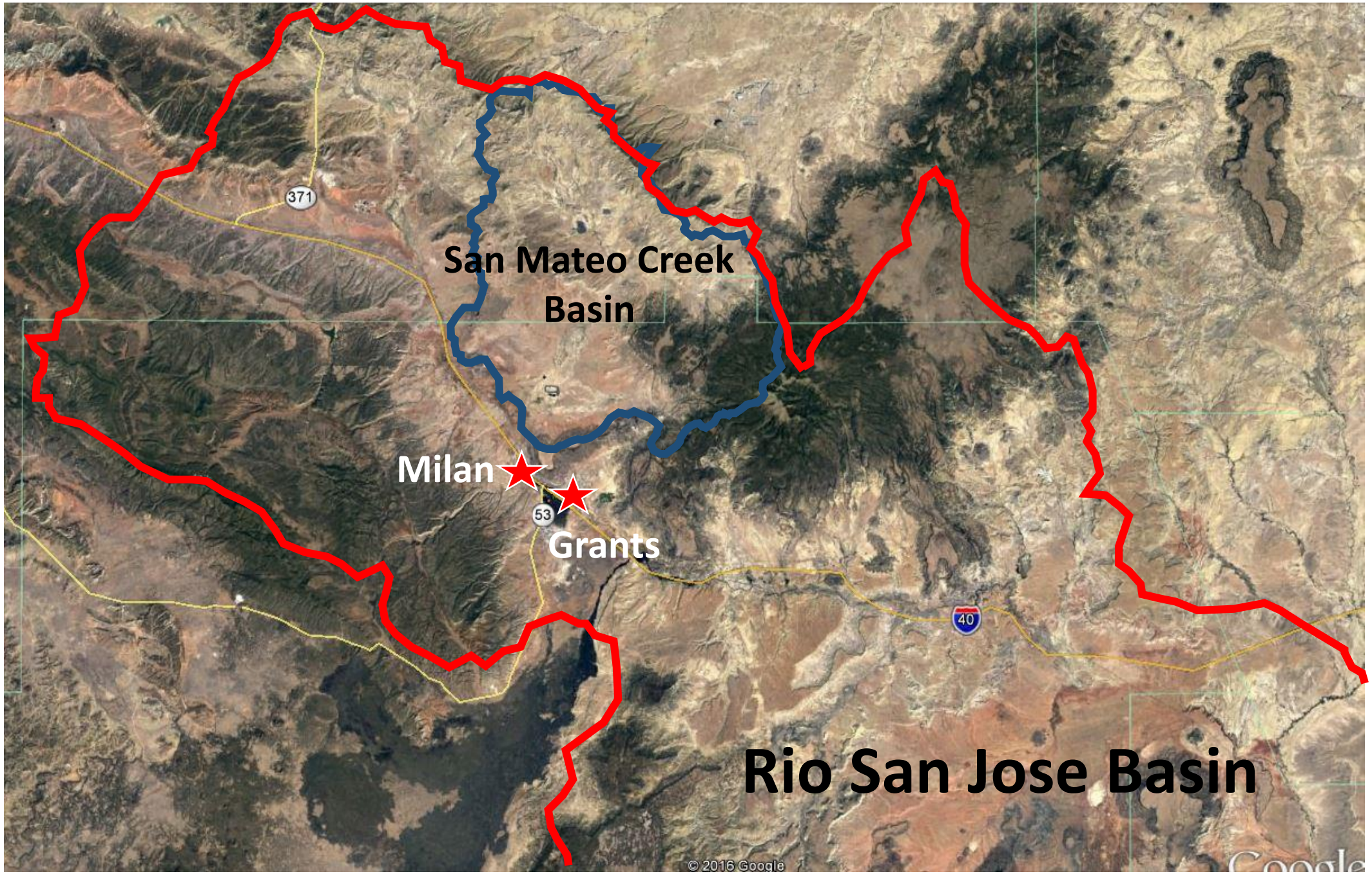
San Mateo Creek Basin Uranium Legacy Site

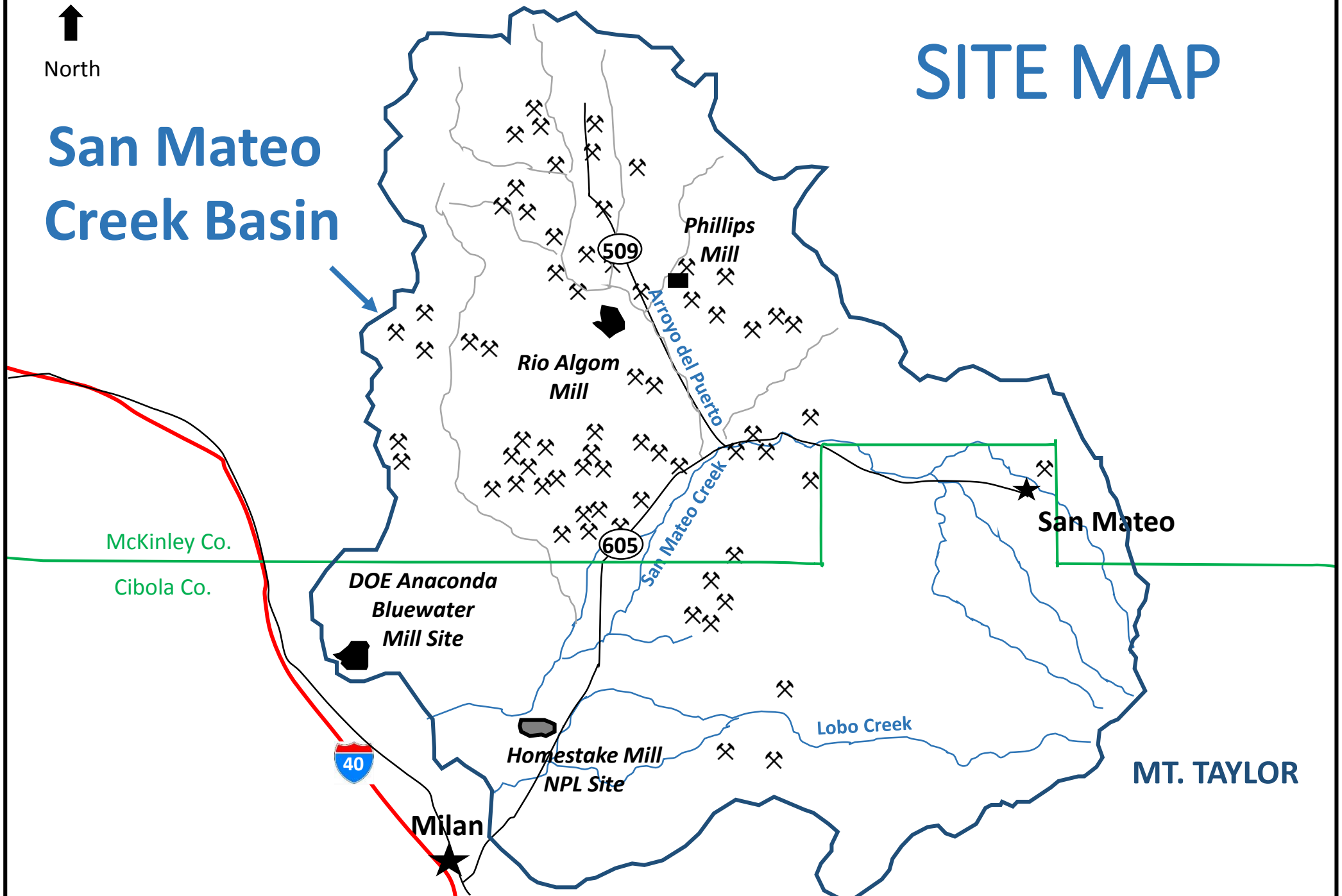
November 17, 2016 Community Meeting
Grants, New Mexico

9881768



SITE LOCATION MAP


San Mateo Creek
Basin
Milan
Grants
371
53
40
Rio San Jose Basin
© 2016 Google

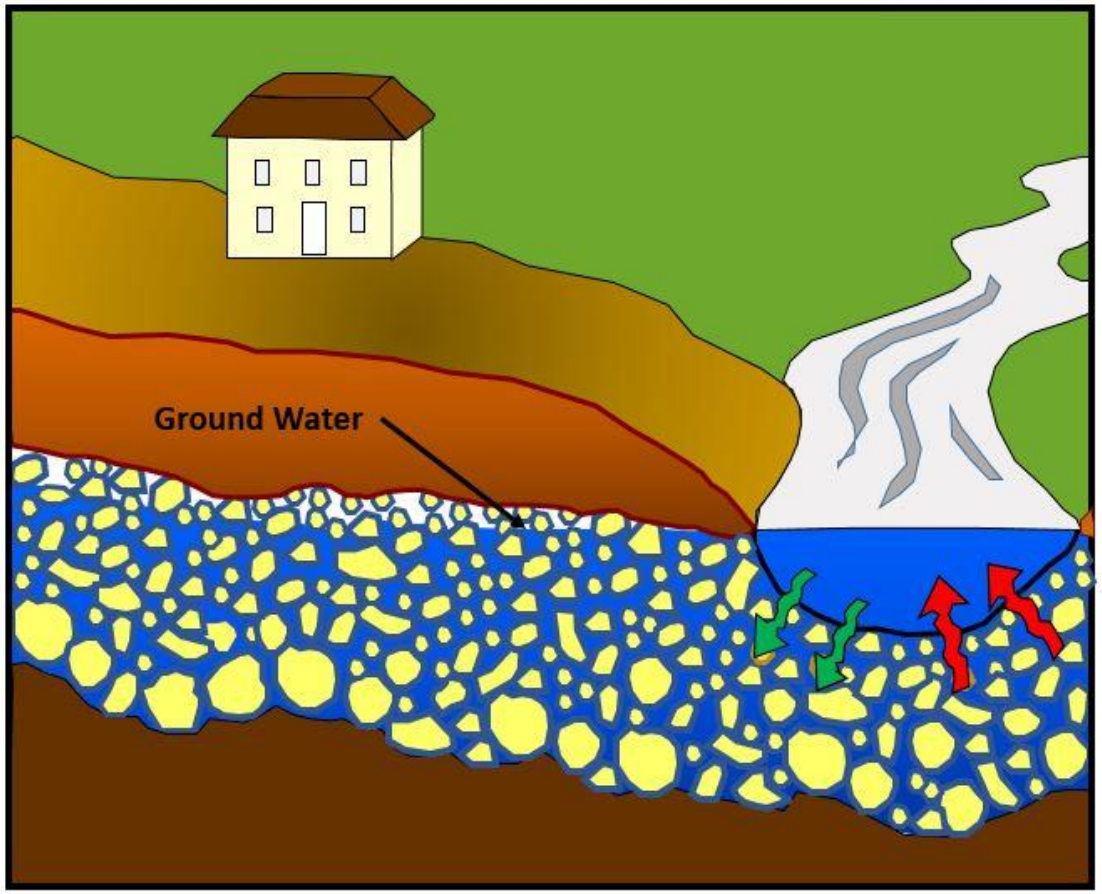

North
SITE MAP
San Mateo Creek Basin
509
Phillips Mill
Arroyo del Puerto
Rio Algom Mill
San Mateo Creek
605
San Mateo
McKinley Co.
Cibola Co.
DOE Anaconda Bluewater Mill Site
Lobo Creek
Homestake Mill NPL Site
40
Milan
MT. TAYLOR

PROJECT OBJECTIVE

Assess ground water impacts by uranium mining industry

WHERE IS THE GROUND WATER?

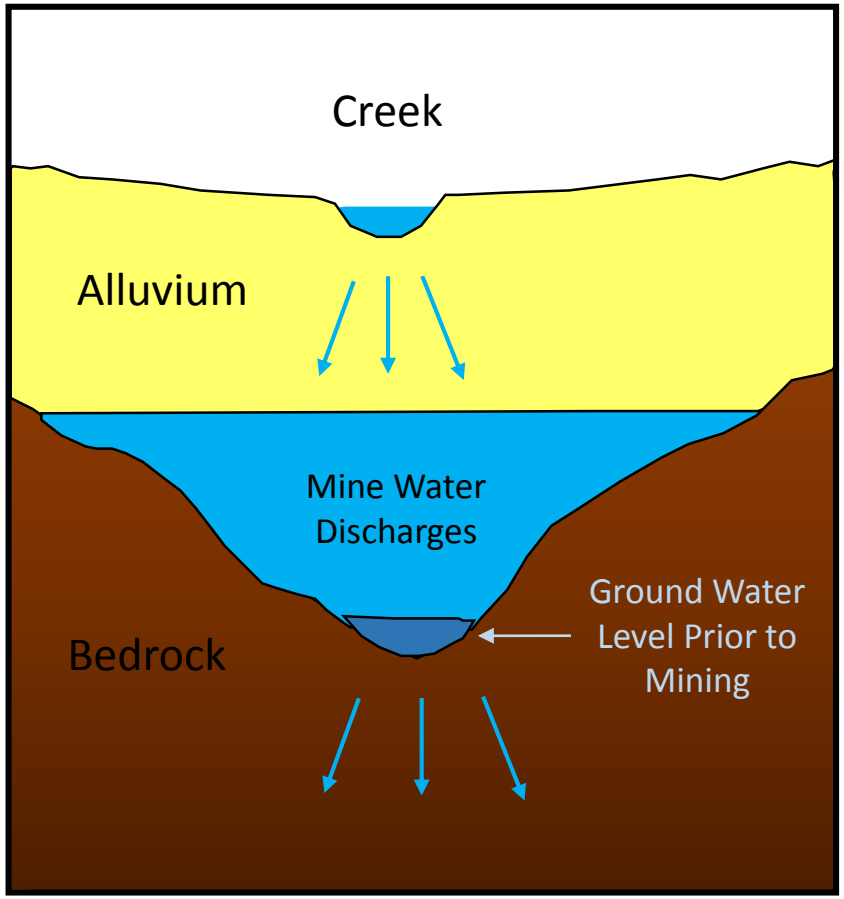
- Alluvial Ground Water
  - Shallow ground water
  - At depths reaching **120 feet**
  - In sediments along drainages
- Bedrock Ground Water
  - Deeper ground water
  - Hundreds of feet deep



Modified from City of Las Cruces
Poster Display

HOW DID MINING OPERATIONS AFFECT GROUND WATER?

- ***Discharged billions of gallons*** of mine water to creeks and arroyos
- ***Created continuous flow of water*** in creeks and arroyos all year
- ***Water infiltrated*** into ground
- ***Increased amount of ground water*** in alluvial sediments and bedrock
- ***Changed quality*** of ground water



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Not to Scale

MINE WATER DISCHARGE

Artificially Created Flows in Creeks and Arroyos

Wet Mine

MULTI-PHASED INVESTIGATION

Phase 1

Shallow Alluvial Aquifer
2012 – 2016

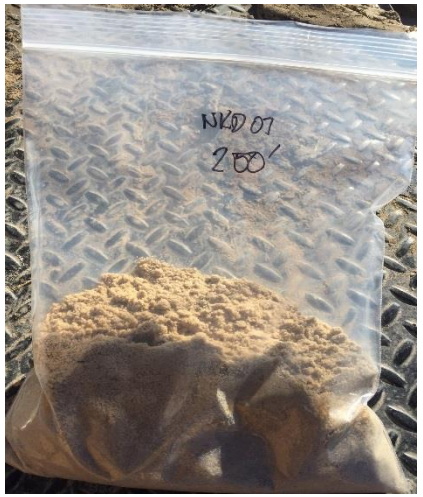
Phase 2

Bedrock & Alluvial Aquifers
2015 – 2017

Phase 3

Conceptual Site Ground Water Model
2016 - 2018

Wet Alluvial Sediments



Bedrock Sandstone

Drill Bit and Piping

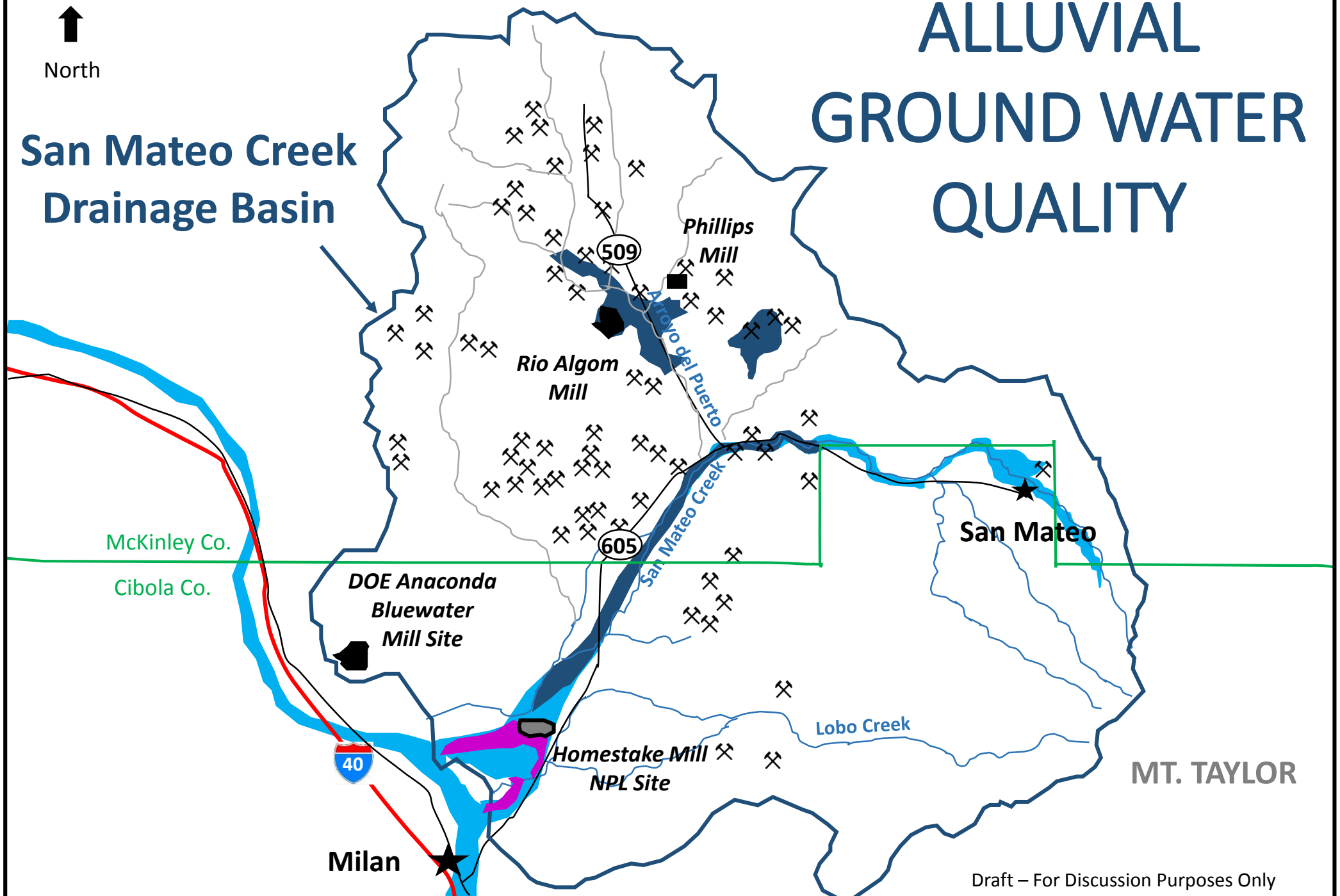
PHASE 1 ACTIVITIES COMPLETED

- **30** Boreholes Drilled
  - **6** monitoring wells installed
  - **24** boreholes dry
- **15** Existing Wells Sampled
  - **10** private wells
  - **5** industry monitoring wells

Core Sample

PHASE 1 RESULTS SUMMARY

- Attempt to Characterize Alluvial Water Quality had **Mixed Results**
  - Lack of Natural Saturation in Many Areas Investigated
- Alluvial **Water Quality Varies** Across Basin
  - Good quality upgradient of mines and mills
  - Poor quality downgradient of mines and mills
- Mine Discharge Water **Increased Saturation** in Alluvium
- Mine Discharge **Water Draining Out** of Alluvium Today


North
San Mateo Creek Drainage Basin
ALLUVIAL GROUND WATER QUALITY
Phillips Mill
509
Rio Algom Mill
Arroyo del Puerto
San Mateo Creek
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San Mateo
McKinley Co.
Cibola Co.
DOE Anaconda Bluewater Mill Site
Lobo Creek
Homestake Mill NPL Site
40
Milan
MT. TAYLOR
Alluvial Ground Water
Poor Alluvial Water Quality (Exceeds Standards)
Poor Alluvial Water Quality Contaminated by Homestake NPL site (Exceeds Standards)
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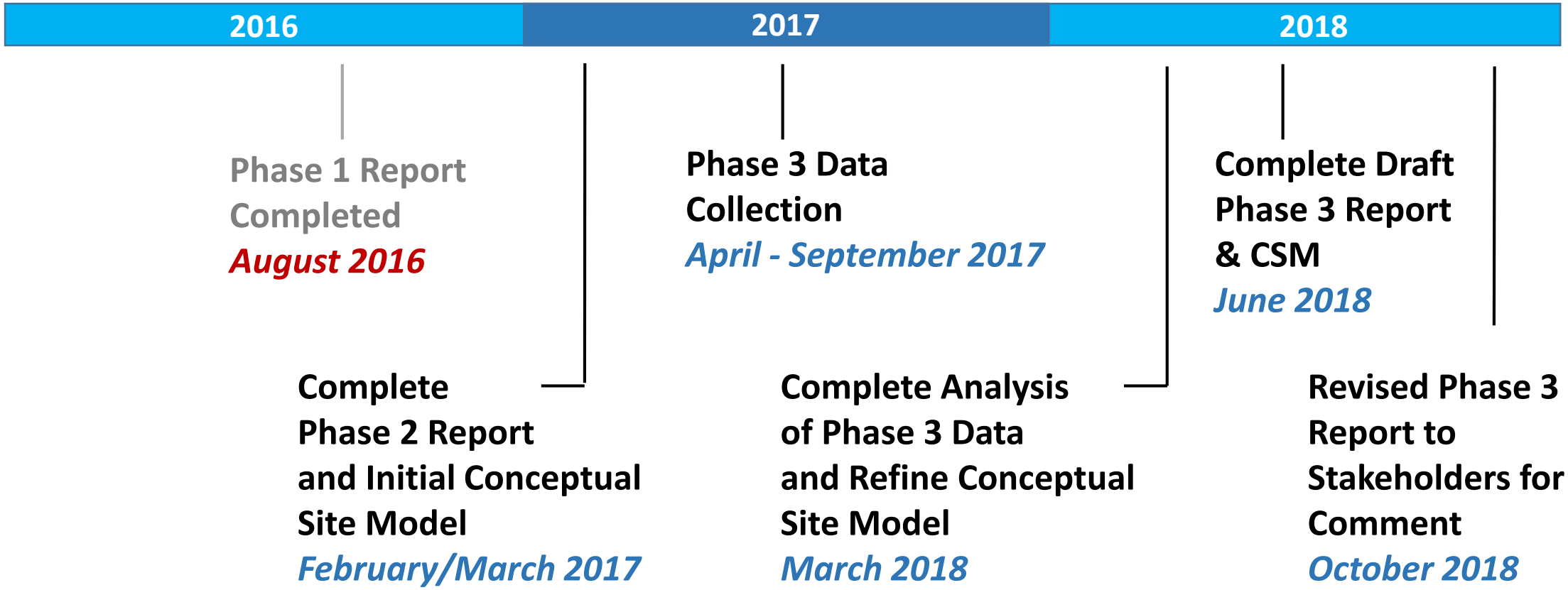
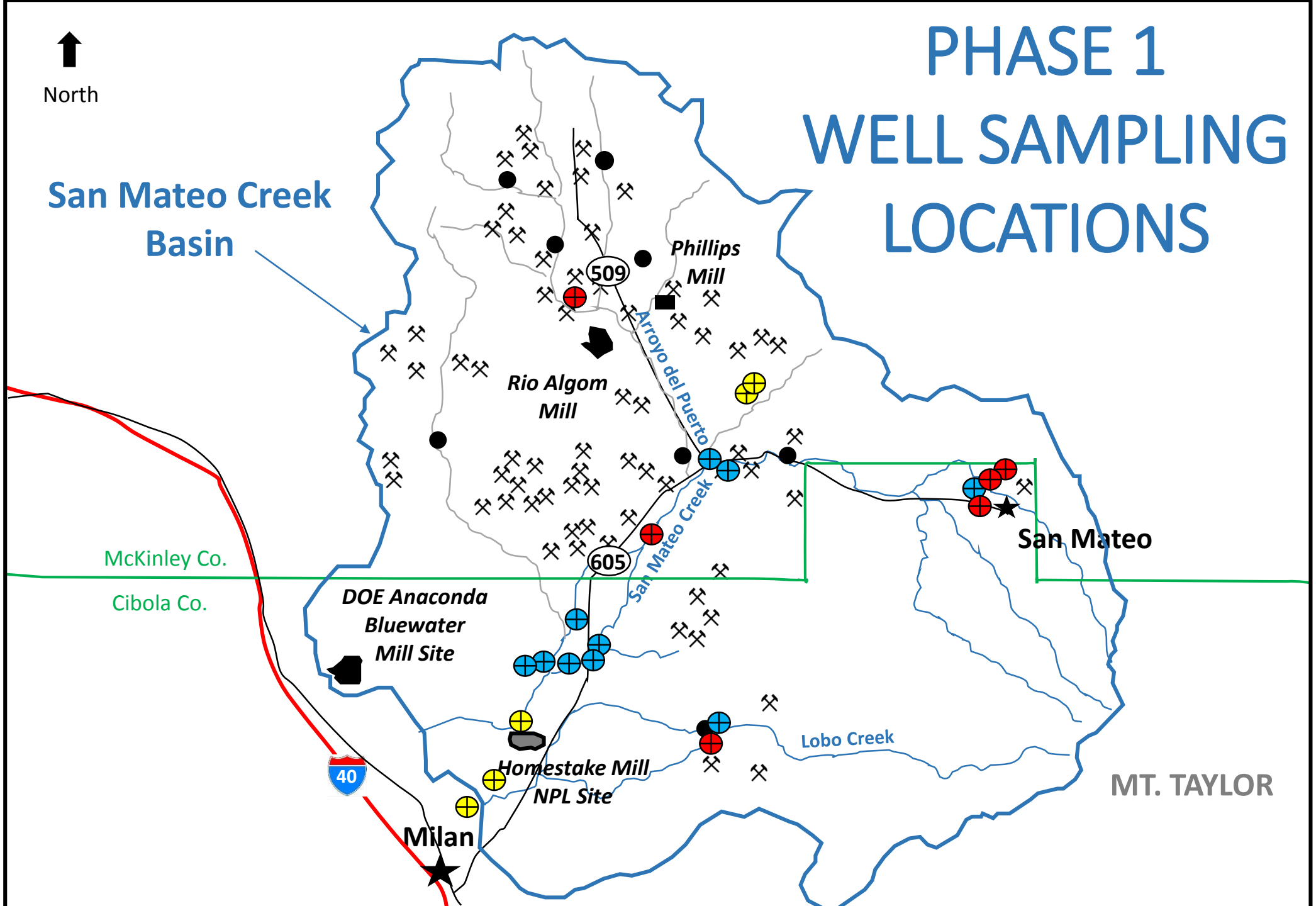
PLANNED ACTIVITIES FOR GROUND WATER INVESTIGATION



Other Slides


North
PHASE 1
WELL SAMPLING
LOCATIONS
San Mateo Creek
Basin
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Mill
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Arroyo del Puerto
Rio Algom
Mill
San Mateo Creek
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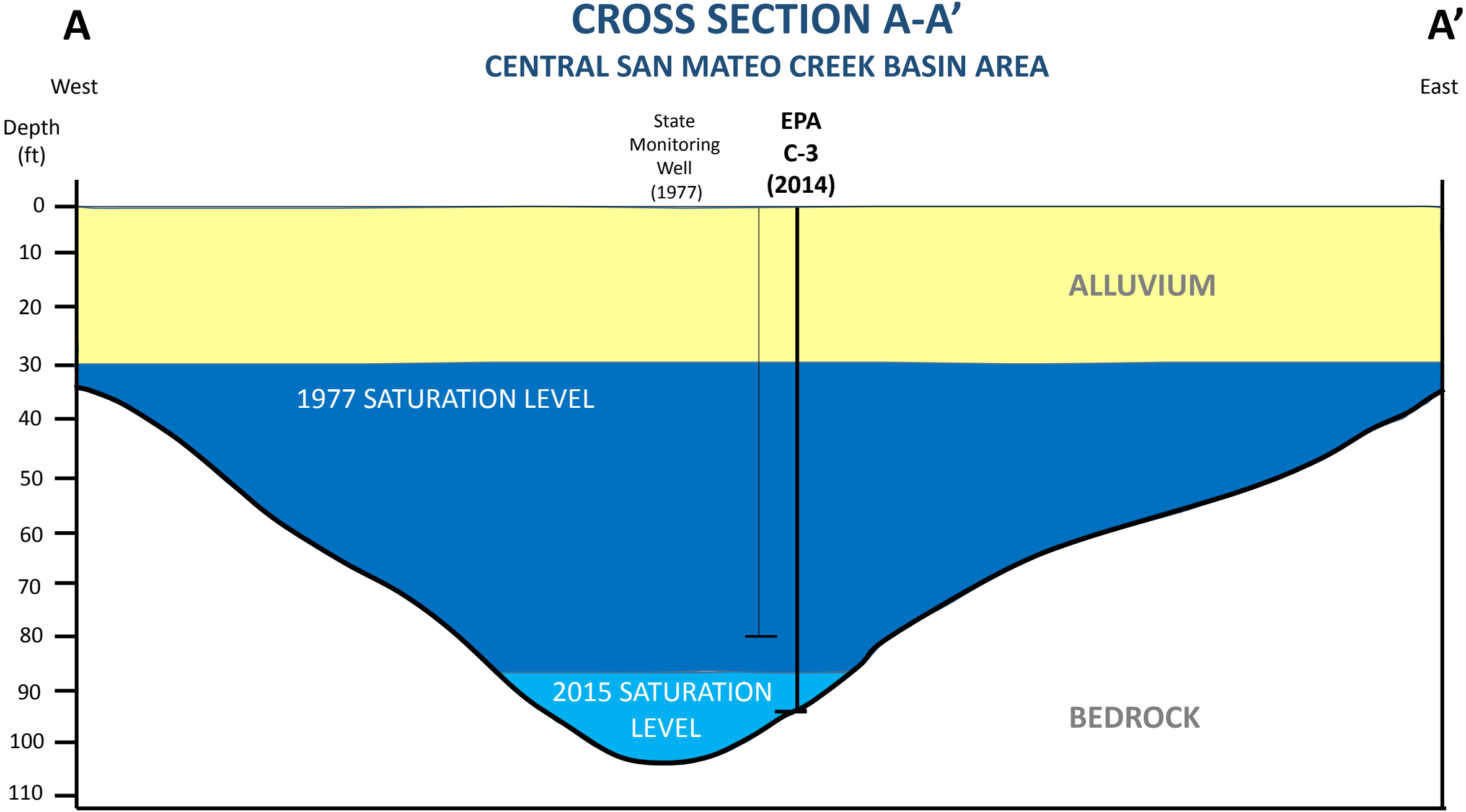
San Mateo
McKinley Co.
Cibola Co.
DOE Anaconda
Bluewater
Mill Site
Lobo Creek
Homestake Mill
NPL Site
40
Milan
MT. TAYLOR
EPA Alluvial
Monitoring Well
Industry
Monitoring
Well
Private Well
Dry Borehole

CROSS SECTION A-A'

CENTRAL SAN MATEO CREEK BASIN AREA



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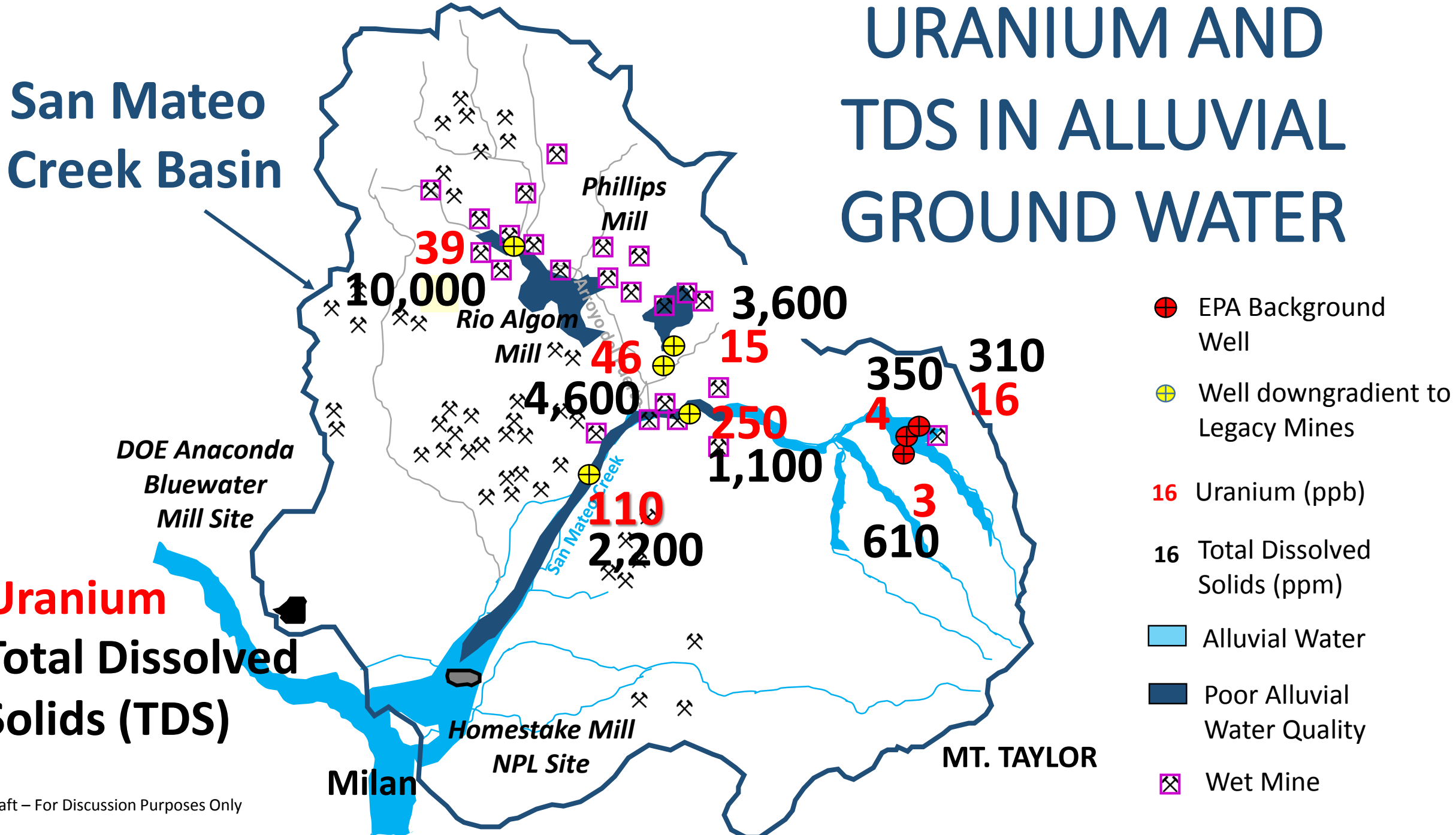
URANIUM AND TDS IN ALLUVIAL GROUND WATER



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